

Abstract

Various inexpensive rolling elements for use under high interface pressure such as induction hardened gears are provided, which have improved seizure resistance at tooth flanks and a temper hardness of HRC 50 or more at 300°C. To this end, a rolling element is made from a steel material which contains at least 0.5 to 1.5 wt% carbon and 0.2 to 2.0 wt% one or more alloy elements selected from V, Ti, Zr, Nb, Ta and Hf; and in which 0.4 to 4.0 % by volume one or more compounds selected from the carbides, nitrides and carbonitrides of the above alloy elements and having an average particle diameter of 0.2 to 5 μm are dispersed. In such a rolling element, the soluble carbon concentration of a martensite parent phase of a rolling contact surface layer is adjusted to 0.3 to 0.8 wt%, the martensite parent phase having been subjected to induction hardening and low temperature tempering, and one or more of the above carbides, nitrides and carbonitrides are dispersed in an amount of 0.4 to 4.0% by volume within the martensite parent phase.